Homework 3 – Self-Adjusting

C++ II

Description

For this assignment we build a self-adjusting list. A self-adjusting data structure is one that can rearrange itself after operations. When creating a self-adjusting structure, it can be approached in a few different ways. For this assignment we will move elements to the head of the list (MTF). Self-adjusting structures have a wide range of uses and are still a current focus of research in Computer Science.

Specifications

You will need to complete the following:

1. You will implement a self-adjusting list in two ways. Start with the code we have written in class.
2. Write an array implementation of self-adjusting lists.
    a. In a self-adjusting list, all insertions are performed at the front.
    b. A self-adjusting list has a find operation, and when an element is accessed by a find, it is moved to the front of the ***list without changing the relative order*** of the other items.
3. Write a linked list implementation of self-adjusting lists.
4. Write a main method which shows all operations of your list are working as expected. Overload the stream insertion operator so the user can display the list to an output stream. The overload should display the elements in order from front to end separated by a comma and demarcated by square brackets [].

Documentation

You will create a document (.docx, .rtf, .pdf) which contains the following:

- Your name and assignment.
- A screenshot of your code output.
- Read the attached paper and write a one-page summary. Be sure to give your opinions on the paper.

What to Submit

You need to submit your C++ code files along with your document. Make sure your document is in the correct format and all your files include your name and assignment. ***ZIP*** your C++ code, but **DO NOT** zip your document file.